

Amendments to the Claims:

1.-30. (Cancelled)

31. (New) A method for guiding the cognitive processes of a subject comprising:
measuring activity of one or more internal voxels of said subject, wherein said measuring is performed by an apparatus comprising an fMRI; and
employing a computer executable logic that takes said measured activity and communicates information to said subject based on said measured activity in less than 10 seconds from when said measured activity is measured, wherein said information guides the cognitive processes of said subject.
32. (New) The method according to claim 31 wherein said activity measurements are made from at least 100 internal voxels.
33. (New) The method according to claim 31 wherein said measuring brain activity comprises scanning entire brain.
34. (New) The method according to claim 31 wherein said one or more internal voxels have a total three dimensional volume of up to 5cm^3 .
35. (New) The method according to claim 31 wherein each of said one or more internal voxels has a total three dimensional volume of up to 1cm^3 .
36. (New) The method according to claim 31 wherein said method further comprises presenting said information to said subject while said subject is inside an MRI scanner.
37. (New) The method according to claim 31 wherein said one or more internal voxel comprise a region of interest.

38. (New) The method of claim 37 wherein said region of interest is selected from the group consisting of substantia nigra, subthalamic nucleus, nucleus accumbens, locus coeruleus, periaqueductal gray matter, nucleus raphe dorsalis, nucleus basalis of Meynert, dorsolateral pre-frontal cortex, and anterior pre-frontal cortex.
39. (New) The method according to claim 37 wherein said region of interest has a primary function of releasing a neuromodulatory substance selected from the group consisting of: dopamine, acetyl choline, noradrenaline, serotonin, and endogenous opioids.
40. (New) The method according to claim 31 wherein said subject is identified as having one or more conditions selected from the group consisting of: Parkinson's disease, Alzheimer's disease, attention deficit disorder, depression, substance abuse and addiction, and schizophrenia.
41. (New) The method according to claim 31 wherein said information is communicated in a manner selected from the group consisting: of providing audio to the subject, providing tactile stimuli to the subject, providing a smell to the subject, and displaying an image to the subject.
42. (New) The method according to claim 31 wherein said information communicated is an instruction.
43. (New) The method according to claim 42 wherein said instruction comprises a text or an iconic indication denoting an action to be performed by said subject.
44. (New) The method according to claim 42 wherein said instruction identifies a task to be performed by said subject.
45. (New) The method according to claim 42 wherein said instruction is selected from a set of instructions stored in memory.

46. (New) The method according to claim 31 wherein said information comprises material to be learned.

47. (New) The method according to claim 31 wherein said information is communicated to said subject in the form of a graph or indicator of the level of activation of said one or more internal voxels to guide said subject to increase or decrease level of activation of said one or more internal voxels through their cognitive processes.

48. (New) A method for cognitive training of a subject comprising:

- (a) measuring activity of one or more internal voxels of a brain of a subject;
- (b) communicating one or more instructions to said subject based on said measured activity of said one or more internal voxels in substantially real time relative to said measuring step, wherein said instructions are communicated to the subject by employing a computer executable logic; and
- (c) having the subject perform a behavior in response to receiving said one or more instructions, wherein said instructions guide cognitive training to said subject.

49. (New) The method according to claim 48 wherein said measuring activity of said one or more internal voxels comprises using a computer executable software for motion alignment of MRI data in substantially real time.

50. (New) The method according to claim 48 wherein said one or more internal voxels comprises at least 100 internal voxels.

51. (New) The method according to claim 48 wherein said one or more instructions are derived from a computer executable logic that selects said one or more instructions from a set of all possible instructions based upon said measured activity.

52. (New) The method according to claim 48, wherein said computer executable logic communicates information to said subject.

53. (New) A computer readable medium comprising:
logic for measuring activity of one or more internal voxels of a brain of a subject; and
logic for communicating information to said subject based on measured activity in substantially real time from when said measured activity is performed, wherein said information is designed to train the subject to modulate activity in the one or more voxels of interest.

54. (New) The method of claim 53 wherein said logic for measuring activity measures said activity while said subject perform a behavior or task.